

REMARKS

Claims 1-69 are pending in the case. Each of claims 1-69 was rejected on new grounds as follows:

- claims 1-5, 7-8, 10-19, 21-30, and 32-69 as obvious under 35 U.S.C. 103(a) over U.S. Letters Patent 5,640,325 (“Banbrook *et al.*”) in view of U.S. Letters Patent 6,625,083 (“Vandenbroucke”); and
- claim 6 as obvious under 35 U.S.C. 103(a) over Banbrook *et al.* and Vandenbroucke in combination with U.S. Letters Patent 6,011,752 (“Ambs”);
- claims 9, 20, and 31 as obvious under 35 U.S.C. 103(a) over Banbrook *et al.* and Vandenbroucke in view of U.S. Letters Patent 5,739,787 (“Burke *et al.*”).

Applicant traverses each of these rejections.

I. INFORMALITIES

The drawings have been accepted.

The listing of the claims does not present any amendments and is, instead, offered for the convenience of the parties to this prosecution.

II. SUBSTANTIVE ISSUES

Each of the rejections is for obviousness. Each includes the combination of U.S. Letters Patent 5,640,325 (“Banbrook *et al.*”) in view of U.S. Letters Patent 6,625,083 (“Vandenbroucke”). All of the rejections are therefore subject to the same legal standards and any defect in the combination of Banbrook *et al.* and Vandenbroucke will afflict all the rejections. The rejections of claims 6, 9, 20, and 31¹ all rely on the combination of Banbrook *et al.* and Vandenbroucke to render obvious the claims from which they depend. Accordingly, if

¹ Claims 9, 20, and 31 are rejected on a combination Banbrook *et al.*, Vandenbroucke, and Burke *et al.* Burke *et al.* is not within the scope and content of the prior art. However, Applicants do not develop this argument in light of the other, more far-reaching errors. Applicants nevertheless point out for the record that they do not acquiesce in the Office’s implied assertion that Burke *et al.* is prior art to the claims.

those claims are not obvious over Banbrook *et al.* and Vandenbroucke, then these claims are not obvious over the art as a whole, either.

A. THE OFFICE MISCONSTRUES BANBROOK *ET AL.*

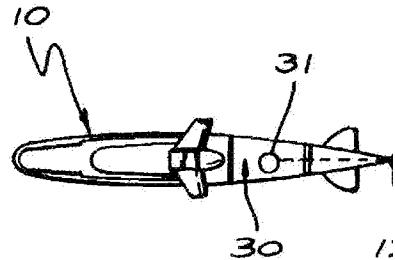
The Office misconstrues Banbrook *et al.* as “[disclosing] an apparatus for use in a marine seismic survey (abstract; Column 1)” and “a seismic survey object” (Fig. 1) (Column 3, Line 55 to Column 4, Line 36).” (Office Action dated December 29, 2010, p. 3) This is incorrect. The word “seismic” never appears in Banbrook *et al.* and the Office provides no explanation as to how the disclosed apparatus could ever be considered a seismic survey spread.

Banbrook *et al.* actually discloses something quite different—a passive, towed array SONAR system for use in underwater warfare. The quickest way to determine that Banbrook *et al.* is not a seismic survey is that the vessel towing the array in the illustrated embodiments, shown below, is a submarine. This is apparent from the drawings, which show the vessel (reproduced below) to be a submarine from a plan, overhead view and from the description:

With reference to FIG. 1, a navigational vessel 10, such as
a surface ship *or submarine*, is shown towing an array 11,

(col. 1, lines 57-60, emphasis added) Submarines are not ever used to tow arrays during seismic surveys. Submersible, remotely operated vehicles are sometimes used in deployment and/or retrieval, but they are not referred to as submarines in the art and they are not used to tow arrays during surveys.

"It is well settled that a prior art reference is relevant for all that it teaches to those of ordinary skill in the art." M.P.E.P. §2141.02 VI; *In re Fritch*, 23 U.S.P.Q.2d (BNA) 1780, 1782 (Fed. Cir. 1992). In determining patentability, one simply cannot ignore parts of references. *Fritch*, 23 U.S.P.Q.2d (BNA) at 1782. Considering Banbrook *et al.* as a whole, one skilled in the present art would appreciate that it discloses a passive, towed array SONAR system for use in underwater warfare. The Office therefore errs when it alleges that Banbrook *et al.* teaches “an apparatus for use in a marine seismic survey” and “a seismic survey object”.



B. THE ART OF RECORD FAILS TO TEACH OR SUGGEST ALL THE LIMITATIONS OF THE CLAIMS

To establish a *prima facie* case of obviousness, the prior art references must teach or suggest all the claim limitations. M.P.E.P. §706.02(j); *In re Royka*, 180 U.S.P.Q. (BNA) 580 (CCPA 1974). As is established immediately above, Banbrook *et al.* does not teach “an apparatus for use in a marine seismic survey” and “a seismic survey object”. It therefore follows that it cannot teach “an inertial measurement unit coupled to the seismic survey object” as is recited in the independent claims. Furthermore, there is no allegation of anything regarding “an inertial measurement unit” in Vandenbroucke and Applicants’ review has yielded none. The combination of references therefore fails to teach or suggest such a limitation.

Still further, Banbrook *et al.* presents its inertial measurement unit (“IMU”) -based approach as a full solution to the problem it addresses. That is, there is no concession of any drawback or limitation on the efficacy of the technique in addressing that problem. Vandenbroucke similarly presents his ultrashort baseline (“USBL”) -based approach as a full solution to the problem that it addresses. Again, there is no indication that there is any deficiency or drawback to the technique. Both techniques are disclosed as whole and complete within themselves and fully capable of addressing the problem for which they were designed to resolve. So not only is there no teaching of the subject limitations, there is no teaching that might suggest such a limitation.

The combination of Banbrook *et al.* and Vandenbroucke therefore neither teaches nor suggests all the limitations of the claims. They therefore, in combination, do not render obvious any of claims 1-5, 7-8, 10-19, 21-30, and 32-69. M.P.E.P. §706.02(j); *In re Royka*, 180 U.S.P.Q. (BNA) 580 (CCPA 1974). Since these claims are incorporated into claims 6, 9, 20, and 31, and those rejections depend upon these, the art of record does not render obvious any claim.

C. BANBROOK ET AL. IS OUTSIDE THE SCOPE & CONTENT OF THE PRIOR ART

It is the Office's burden to establish that the references are within the scope and content of the prior art. *In re Oetiker*, 24 U.S.P.Q.2d (BNA) 1443, 1445-46 (Fed. Cir. 1992). A reference can be asserted against the claimed invention under §103 only if (1) it is within Applicant's field of endeavor, or (2) is reasonably pertinent to the problem facing Applicant even

though not within Applicant's field of endeavor. *In re Clay*, 23 U.S.P.Q.2d (BNA) 1058, 1060 (Fed. Cir. 1992).

1. The Application of the Test

Banbrook *et al.* is clearly not within Applicants' field of endeavor. The evidence of record, namely Applicants' specification, establishes that, "The invention pertains to seismic surveying and, more particularly, to a method and apparatus for more accurately determining the position of seismic survey objects in a marine seismic survey. ([¶]0002 of the application as published) When Banbrook *et al.* is considered as whole and as by one skilled in the art as is required, M.P.E.P. §2141.02 VI; *In re Fritch*, 23 U.S.P.Q.2d (BNA) 1780, 1782 (Fed. Cir. 1992), it clearly teaches a passive, towed array SONAR system for use in underwater warfare. Banbrook *et al.* therefore is not within Applicants' field of endeavor.

That leaves, then, the question of whether Banbrook *et al.* is "reasonably pertinent". The courts have provided guidance on this question:

A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, *the purposes of both the inventor and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve*. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. *If it is directed to a different purpose, the inventor would accordingly have less motivation or occasion to consider it.*

Clay, 23 U.S.P.Q.2d (BNA) at 1060.

The use of passive—or even active—towed array SONAR systems for use in underwater warfare operate significantly differently and under significantly different constraints relative to marine seismic surveys. Sonar systems such as those disclosed in Banbrook *et al.* are used to detect and track moving objects in the water column that are relatively close to the vessel. A seismic survey, on the other hand, does not track anything, is not interested in moving objects,

considers any information from the water column to be noise, and is interested in geologic formations typically at great distance from the vessel.

Furthermore, the target detected and tracked by the SONAR system of Banbrook *et al.* will typically have the ability to fire on the vessel deploying the array—a threat not posed by subsurface geological formation in a seismic survey. And, still further, frequencies used in SONARs such as that disclosed in Banbrook *et al.* operate at frequencies very different from seismic frequencies. The SONAR system of Banbrook *et al.* is always as concerned about the content of the water column immediately in front of and behind the vessel as it is below the vessel.

Factors such as these affect all manner of design and operational considerations for the respective towed-arrays, and these differences evidence the distinctiveness of these two fields of endeavor. *See Clay*, 23 U.S.P.Q.2d (BNA) at 1060-61; *In re Horn*, 203 U.S.P.Q. (BNA) 969, 971 (C.C.P.A. 1979). They furthermore establish the fact that those ordinarily skilled in the art would not turn to the art of SONAR systems.

2. Illustrative Legal Precedents

Applicants direct the Office’s attention to two court decisions that can help elucidate Applicants’ position. The first is the Federal Circuit’s decision in *In re Clay*, previously cited above. The second is the decision of the Court of Customs and Patent Appeals—a predecessor to the Federal Circuit whose decisions are binding on this proceeding—in *In re Pagliero*, 210 U.S.P.Q. (BNA) 888 (CCPA 1981).

a. *In re Clay*

The application in *Clay* eventually issued as U.S. Letters Patent 5,172,825 (“the ‘825 patent”), and so its subject matter is readily discernible. The claims on appeal were reproduced in the Court’s decision as reported. As the “Abstract” states, the claims were generally directed to:

A process for storing a refined liquid hydrocarbon product in a storage tank having a dead volume. The process comprises filling the dead volume with a rigid crosslinked polymer gel and

storing product in the remaining internal volume of the storage tank.

(‘825 patent, “Abstract”) The reference involved in the appeal was U.S. Letters Patent 4,683,949 (“the ‘949 patent”), and so its content is also readily discernible. The “Abstract” of the ‘949 patent reads, in pertinent part:

Conformance improvement is achieved in a subterranean hydrocarbon-bearing formation using a gel comprised of a high molecular weight water-soluble acrylamide polymer, a chromium III/carboxylate complex capable of crosslinking the polymer and an aqueous solvent. The gel components are combined at the surface and injected into the desired treatment zone via a wellbore to form a continuous single-phase gel.

(‘949 patent, “Abstract”)

In the appeal, Clay challenged the rejections on the ground that the reference was outside the scope and content of the prior art. *Clay*, at 1060. The court summarized the Office’s position as follows:

The PTO argues that [the reference] and [Applicant’s] inventions are part of a common endeavor—“maximizing withdrawal of petroleum stored in petroleum reservoirs.”

Id. The court rejected this argument:

However, [the reference] cannot be considered to be within [Applicant’s] field of endeavor merely because both relate to the petroleum industry. ...[Applicant’s] field of endeavor is the *storage* of refined liquid hydrocarbons. The field of endeavor of the [reference], on the other hand, is the *extraction* of crude petroleum. The Board clearly erred in considering [the reference] to be within the same field of endeavor as [Applicant’s].

Id. Note that Office had characterized the field of endeavor too broadly to be supported by the record. With respect to the second part of the test, the Federal Circuit, after a discussion of the two inventions, held:

A person having ordinary skill in the art would not reasonably have expected to solve the problem of dead volume in tanks for storing refined petroleum by considering a reference dealing with plugging underground formation anomalies. The Board’s finding to the contrary is clearly erroneous.

Id., at 1061. Thus, defining a field of endeavor beyond that supported by the disclosures does not bring the reference within the scope and content of the prior art for obviousness purposes.

b. *In re Pagliero*

In re Pagliero also teaches this principle. In *Pagliero*, the Applicant claimed a “method for producing a decaffeinated vegetable material.” *Id.*, 210 U.S.P.Q. (BNA) at 888. The claims were rejected over three references:

- a primary reference (“Nutting *et al.*”) that taught a decaffeination process employing a de-oiling step to separate out coffee oils prior to decaffeination;
- a secondary reference (“Rector”) that taught grinding roasted coffee beans with oil and pulverizing the resultant mixture to obtain a powdered coffee; and
- an alternative secondary reference (“Aiello”) that taught a “lipoid theory” of narcotics.

Id., at 889-90.

The Board affirmed the rejections on appeal, part of the opinion being quoted in the court’s decision. The Board held:

However, we are convinced that it would have been obvious within the meaning of Section 103 to utilize a liquid water-immiscible fatty material as the decaffeinating medium for producing decaffeinated vegetable materials in view of the disclosures in the Rector and Aiello references.

Since it is readily apparent from the foregoing teachings in Rector and Aiello that caffeine is soluble in fatty materials, we are convinced that it would have been obvious to one of ordinary skill in the art to utilize such materials to remove caffeine from the caffeine-containing materials of Nutting. Appellants have merely substituted one known caffeine solvent for another such solvent and have only obtained the expected results.

Id., at 891.

Thus, the Board construed the relevant art broadly as “decaffeination” processes. The court, however, held that the Board “...misinterpreted the disclosure of Rector, ...erroneously considered a non-analogous publication (Aiello), and ...failed to consider the teaching of the references as a whole.” *Id.*, at 891-92. In addressing whether Aiello was analogous, the court stated that:

Our determination here is not without difficulty. However, we think the difficulty arises from not

considering the subject matter as a whole and instead focusing on the scientific principle involved....

Id. at 892, quoting *In re Van Wanderham*, 154 U.S.P.Q. (BNA) 20, 25 (1967). So *Pagliero* teaches that focusing on an involved scientific principle, rather than the subject matter as a whole, can lead to an overly broad definition for the field of endeavor and lead to the erroneous inclusion of non-analogous art.

3. Conclusion on Analogous Art

Applicants respectfully submit that the Office is improperly focusing on a single application of a technological principle common to both the claims and Banbrook *et al.* rather than considering the subject matter of the claims and Banbrook *et al.* as wholes. “[T]he mere fact that a device or process utilizes a known scientific principle does not alone make that device or process obvious.” *In re Brouwer*, 37 U.S.P.Q.2d (BNA) 1663, 1666 (Fed. Cir. 1995), quoting *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 5 U.S.P.Q.2d (BNA) 1434, 1440 (Fed. Cir. 1988).

The improper focus on the technological principle has, as in *Pagliero*, resulted in the consideration of non-analogous art. The Office has not yet identified what it considers to be Applicants’ field of endeavor, or what it considers to be the problem that Applicants’ are confronting. However, it is apparent that its formulations must be too broad as was the case not only in *Pagliero*, but also in *Clay*.

When both Banbrook *et al.* and the claims are considered as a whole, rather than for their one commonality, it is evident that Banbrook *et al.* is from a non-analogous art. It is evident that the present claims recite a position determining technique for use in a marine seismic survey. Banbrook *et al.* plainly teaches a technique for determining position on a cable in a SONAR array. The differences between the SONAR application and the marine seismic survey far outweigh the one similarity on which the Office has focused in terms of whether one skilled in the art addressing the problem confronting the inventors would look to Banbrook *et al.* for help. Since Banbrook *et al.* is directed to a different purpose than the claimed invention, one of ordinary skill in the art “would accordingly have had less motivation or occasion to consider it”. *Clay*, 23 U.S.P.Q.2d (BNA) 1061. Banbrook *et al.* is therefore outside the scope and content of the prior art. *Clay*, 23 U.S.P.Q.2d (BNA) at 1060; *Pagliero*, 210 U.S.P.Q. (BNA) at 888-890.

**D. BANBROOK ET AL. & VANDENBROUCKE
ARE IMPROPERLY COMBINED**

It is the Office's burden to establish that the references are combinable. *In re Oetiker*, 24 U.S.P.Q.2d (BNA) 1443, 1446 (Fed. Cir. 1992). The Office's justification for combining the references is that:

It would have been obvious to modify Banbrook to include using short baseline or ultrashort baseline acoustic positioning systems with the survey components as taught by Vandenbroucke in order to determine the position of the survey components relative to the vessel or other components in the survey so that the positions will be known for processing the data acquired.

(Office Action dated December 29, 2009, pp. 3-4) There are a number of errors in this position.

A number of these errors arise from those already discussed above. For example, Banbrook *et al.* does not teach anything regarding a “seismic survey” or a “seismic survey object” as is assumed by this reasoning. Banbrook *et al.* is outside the scope and content of the prior art, and so its teachings become apparent only in the hindsight of Applicants’ disclosure. Furthermore, although both references teach the use of hydrophones, it is evident to those skilled in the art that different frequencies are used in SONAR than in seismic survey and so the inference that the two use the “same” sensors is not supported in the record.

But most significant among these errors is that the Office’s reasoning does not find any basis in the evidence of record. The Office alleges that the motivation is “...so that the positions will be known for processing the data acquired”. However, both Banbrook *et al.* and Vandenbrouke already affirmatively state that their respective techniques already provide this benefit. The record therefore establishes that not only was such position determination already known, there were at least two different, alternative techniques for doing it. And, as noted above, neither Banbrook *et al.* nor Vandenbroucke suggests any deficiencies that might be cured by combining their technique with another. Thus, not only is there no longer any motivation to find a way to determine position, but Banbrook *et al.* and Vandenbrouke already provide two different ways to meet this desire.

Indeed, the only teaching or suggestion in the record that IMU-based and USBL-based techniques might be improved upon in any way, much less through combination, is in Applicants’ disclosure. This is the very definition of “hindsight”. One cannot use Applicant’s disclosure as a “template” or a “pattern” from which to reconstruct his invention from the prior art. *In re Gorman*, 18 U.S.P.Q.2d (BNA) 1885 (Fed. Cir. 1991); *In re Fritch*, 23 U.S.P.Q.2d (BNA) 1780

(Fed. Cir. 1992); *In re Oetiker*, 24 U.S.P.Q.2d (BNA) 1443 (Fed. Cir. 1992). “The combination of elements from non-analogous sources, in a manner that reconstructs the applicant’s invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness.” *In Re Oetiker*, 24 U.S.P.Q.2d (BNA) 1443 (Fed. Cir. 1992).

E. THERE IS NO REASONABLE EXPECTATION OF SUCCESS IN THE ASSERTED COMBINATION

The art of record must establish a reasonable probability of success arising therefrom. M.P.E.P. §2143.02; *In re Naylor*, 152 U.S.P.Q. (BNA) 106, 108 (C.C.P.A. 1966); *In re Rinehart*, 189 U.S.P.Q. (BNA) 143, 148 (C.C.P.A. 1976). Both Banbrook *et al.* and Vandenbrouke already affirmatively state that their respective technique provide position determination and represents their technique as complete. Neither Banbrook *et al.* nor Vandenbroucke suggests any deficiencies that might be cured by combining their technique with another. Thus, even ignoring the other deficiencies in the *prima facie* case, the only thing that one skilled in the art would expect from combining the two techniques is an unnecessary and undesirably complex, expensive, duplication of effort. This is not a “reasonable expectation of success”, and so the combination fails to render obvious any claim.

III. CONCLUDING REMARKS

Applicants respectfully submit that the claims are in condition for allowance, and request that they be allowed to issue. The Examiner is invited to contact the undersigned attorney at (713) 934-4053 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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